MEMORANDUM

ACTION ACTION

NATIONAL SECURITY COUNCIL

DIVITIDO OFFICIAL USE

March 4, 1971

MEMORANDUM FOR:

DR. KISSINGER

FROM:

ROBERT M. BEHR

SUBJECT:

Post-Apollo Space Cooperation

The post-Apollo space cooperation talks with Lefevre (11-12 February 71) were not a resounding success. As expected, the contentious issue was that of our qualified assurances regarding launch services. At the final meeting, Lefevre said that unless the US is prepared to be more forthcoming, the prospect for European participation in the space shuttle project is dim.

At Tab B is a sampling of European reactions to the talks. I have extracted these expressions from cables from our posts. The general tone is somber, reflecting a concern that the US is not really interested in cooperation with Europe.

The reactions from Europe have caused discomfiture in Alex Johnson's office and dyspepsia at NASA. All of this has led to talk of modifying the US position (in the direction of Europe's demands), which has prompted, in turn, anguished cries from the people institutionally involved in the future of INTELSAT.

There is no need for you to get involved in this hassle at the moment. I feel reasonably confident that the problems can be sorted out. You should, however, have a better understanding of what this is all about in the event that Alex Johnson seeks your judgment. At Tab A is an issues paper -- somewhat lengthy -- which presents the situation as best I can describe it.

Finally, there is another aspect to this problem which will ultimately have to be resolved by the President. The issue is whether it is in the interest of the US to continue the development of the space shuttle/station and, if so, to what extent do we wish to engage foreign participation? You should discuss this with Ed David at an early opportunity. The first part of the issue is primarily a budget question, but the second part stems from varying interpretations of what the President really wants in the way of space cooperation. The readings differ with the players.

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RECOMMENDATIONS:

- 1. That you read the issues paper at Tab A.
- 2. That you discuss foreign participation in the Space Transportation System with Ed David.

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cc: Helmut Sonnenfeldt

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Post-Apollo Space Cooperation

<u>ISSUE:</u> Should the United States adopt a less rigid position regarding the provision of launch services for European regional communications satellites in return for substantial European commitment to the US Space Transportation System (STS)?

BACKGROUND:

<u>Program description and status.</u> The Space Transportation System, now in the development stage, consists of a re-usable space booster, an orbiting space station, and possibly a space tug, which would have the capability of transporting payloads from near-earth orbit to high altitude geostationary orbit.

The shuttle is a new concept for putting scientific and technological payloads into space at costs far lower than we presently pay per pound of payload.

Automated spacecraft can be built with more conventional structural design and more off-the-shelf equipment. Also, when an experiment is completed, the shuttle will bring back the spacecraft from its orbit, and a new experiment installed, thus saving the cost of building a new vehicle. The same would be true of communications satellites or weather satellites that go wrong.

The shuttle system is a type of rocket transportation designed to operate for multiple missions. It will do away with the large stable of different boosters the United States now maintains because it will be able to put into space both automated, unmanned vehicles and scientists and engineers, and return them to the ground base when their missions are completed. They will land like airplanes on runways, and just as easily. It is a concept that will revolutionize space transportation, paving the way for increased use and usefulness of space to mankind.

The FY 1972 budget contains \$100 million for a) proceeding with detailed design and development of the engine for a space shuttle and b) continuing design (but not development) for the shuttle air frame. While the Administration has thus allowed NASA to continue the shuttle program on an incremental basis in FY 1972, the Administration has not committed itself to developing and procuring an operational space shuttle transportation system. Such a commitment would probably cost in the range of \$8-12 billion over the next 8-10 years. NASA's very preliminary cost projection through FY 1976 is as follows (millions of dollars):

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	1972	1973	1974	1975	1976
Budget authority	100	400	900	1,400	1,850

The basis for foreign participation in the STS. In 1969 a Task Group led by Vice President Agnew submitted recommendations on space programs for the next ten to fifteen years, placing special emphasis on the space program's international implications. The Task Group identified a number of areas in which international cooperation would be desirable, such as manned flight, applications of space technology, and scientific research.

In March 1970, the President established the future goals of our space program as exploration, scientific knowledge, and practical application. He made greater international cooperation a specific objective. The President expressed the particular hope that existing international cooperation on scientific payloads could be extended to cooperation on larger satellites and in astronaut crews. The Administrator of NASA echoed the call for cooperation during visits to the capitals of Western Europe, Canada, Japan, and Australia, where he sought to interest other governments in participating in our post-Apollo program -- particularly in the development and use of a new space transportation system and a manned space station. Western European countries responded with considerable interest, and a series of meetings concerning the political and technical aspects of their participation began in mid-1970.

Most recently, in his Annual Foreign Policy Report for 1971, the President said:

"Space is already a matter of broad international cooperation. We have some 250 agreements with 74 countries covering space cooperation.

"And space has already been put to the service of man in the new global communications systems and in weather monitoring systems. But this is only a beginning. Space is the only area of which it can literally be said that the potential for cooperation is infinite.

"We have opened virtually all of our NASA space projects to international participation. I have asked NASA to explore in the most positive way the possibilities for substantial participation by Western Europe, Japan, Canada, and Australia in our post-Apollo programs. The result is uncertain, for there are very real difficulties to be solved. We will continue our efforts to meet these problems, for a successful international program of space exploration could set a precedent of profound importance."

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Negotiations with the Europeans. In addition to numerous informal discussions with European space officials, we have had two meetings in Washington with ministerial-level representation from the European Space Conference (ESC). At both of these meetings -- one in September of last year and the other on the 11th and 12th of February, 1971 -- the delegations were headed by Minister Theo Lefevre, President of the ESC, and Ambassador U. Alexis Johnson.

These discussions ranged over such subjects as policies relating to technology transfer, the definition of "substantial European participation" (10% of the program costs), management responsibilities, and US guarantees to Europe for provision of launching services for regional telecommunications satellites both before and after the advent of an operational space shuttle. It is this last topic that has generated considerable smoke and some heat.

The US position has been that we will assure launch services for those European projects that are "...for any peaceful purposes consistent with relevant international agreements". The INTELSAT arrangements to be taken up for approval of the membership at the final Plenipotentiary meeting opening on 14 April 1971 are germane to the US formulation. If a European communications satellite is technically compatible with INTELSAT and if two-thirds of the INTELSAT Assembly vote in favor of the proposal, there would then be no basis for opposition by the consortium. In that event we would be prepared to provide launch services. If a two-thirds vote were not achieved, then the US would evaluate the case on its merits and launch, or not launch, depending upon our evaluation of the probable economic impact on INTELSAT.

The Europeans have expressed great dissatisfaction with the US position. They point out that a negative finding by the Assembly would be merely "advisory" and that, were the US to deny launch services on the basis of such an opinion, it would put the US in the position of being the sole judge of what is best for the Europeans. This measure of control is particularly repugnant to the French and to Lefevre, who appears to be philosophically aligned with his neighbors. The Europeans are completely agreeable to our two broad conditions for launch -- that is, for peaceful purposes and consistency with international agreement. They insist, however, in having the right to interpret international agreement in accordance with their own lights.

In the face of a negative INTELSAT finding, but after the joint construction of the STS, the US has agreed to sell an STS for launch by the Europeans at their own facility. NASA has estimated for the Europeans that the cost to construct an independent STS launch facility would run several hundred million dollars. Therefore, the Europeans feel this last offer is not a realistic alternative.

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PA/HO, Department of State E.O. 12958, as amended June 22, 2004

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Mother problem that has not been explicitly discussed is what the do if part way through the development it canceled the STS, leaving with its own partially completed element of the STS and no guaranteed for its telecommunications satellites.

There is room for further negotiation, but without some relaxation our stated position, strong pressures will arise in Europe to proceed with development of their own launcher -- Europa III. Under these circumstances, any European commitment to the STS program would probably be done on a nation-by-nation basis, outside the framework of the European Space Conference, and at a considerably reduced financial scale.

Projection of Booster Requirements for European Payloads

European Space Missions. The Europeans forecast the following satellite missions over the next decade, as part of either the collective program (ESRO, ESC) or of national or multi-lateral programs.

Type of Mission	Number of Flights	Booster Class
Telecommunications	8-11 3-4	Thor-Delta Atlas-Centaur
Scientific payloads	20-30 1-2	Thor-Delta Atlas-Centaur
Aeronautical services	2-3	Thor-Delta
Meteorology	1-5	Thor-Delta
Space applications (technology, earth resources, geodesy satellites)	3-4	Unspecified, but presumably Thor-Delta

These missions total 40 to 60 launches, of which all but 10% will use Thor-Delta class boosters. Since the Europeans have already built a similar class booster (Europa II) and its launch facility, it can be assumed that they are capable of launching these missions without US cognizance. The current problem therefore revolves around the availability of Atlas-Centaur class boosters to launch the 4-6 European missions requiring greater thrust. Although these missions are only 10% of the entire mission complement, they represent the predominant European interest in space, viz, telecommunications satellites.



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European Telecommunications Satellites. The main plans center around a satellite system in geosynchronous, equatorial orbit to connect 20 European and near European cities by telephone and television, and to extend TV coverage to some other areas in the general region. The telephonic traffic estimate runs from 3000 circuits in 1980 to 20,000 circuits in 1990, plus two TV channels and several audio channels. The program is estimated to cost \$450M by 1980.

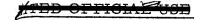
The satellites necessary to perform these functions will weigh 1500-2000 lbs., and will require an Atlas-Centaur or Titan IIIB-Centaur class booster to put them in geosynchronous orbit. The Europeans are tentatively undertaking the development of such a booster, designated Europa III.

Europa III. Europa III as now planned will be a two stage, 355,000 lb. rocket capable of putting about 2000 lbs. into synchronous orbit. The launch will be from a pad to be added to the existing launch facility in French Guiana. Consensus is that there are no technical difficulties that would preclude the construction of this system by the European nations. The cost of the project is estimated to be \$500M, but it is conceded that the cost could easily be 50% more. So far only study money has been spent (the order of \$10M), but a decision to go into the hardware stage will have to be made within the year if the operational data of 1978 is to be met. France, Germany, Belgium, and the Netherlands are currently funding the program, but without UK participation it is unlikely that Europa III will be built. All of the Europeans favor a regional telecommunications space system. Thus, it is believed that when convinced there is no less expensive alternative, UK and Italy will support Europa III in order to have the system. But first they want to explore fully the possibility of buying the appropriate US booster.

European Participation in the US Space Transportation System (STS). An attractive alternative to building Europa III is to buy US boosters during the 1970's and the STS after that. To gain access to US boosters and also to share in the new technology inherent in the development of the STS, the Europeans are considering our invitation to participate financially and technically in the construction of the STS. The cost (about \$1B) would be comparable to that of Europa III and the Europeans would end up as partners with us in a larger, more flexible system built with the technology of the 1970's, rather than duplicating a more limited booster that will be almost 20 years old at the time it goes operational.

Information on INTELSAT

INTELSAT was organized on an interim basis in 1964 largely on our initiative, with our technology, and with the US signatory, COMSAT, putting up over 50 percent of the investment. It has been extraordinarily successful.



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Eleven countries participated initially. In six years the number of partner-members has grown to 77 countries. Yugoslavia is thus far the only Communist nation in the system. A half dozen more countries are on the point of joining.

INTELSAT is the first cooperative peaceful use of outer space for everyday commercial purposes.

An object over the equator at a distance of 22,300 miles moves synchronously with the earth's rotation and thus hovers "stationary" over one-third of the globe. INTELSAT has geo-stationary communication satellites at 22,300 miles above the Atlantic, Pacific, and Indian Ocean basins, from where they can "see" and link up member countries that have ground stations. Some 50 ground stations are presently in operation in 30 countries. By late 1972 there will be 70 ground stations in operation in 50 countries.

The satellites are capable of transmitting any kind of electronic message: telephone, telegraph, computer data, facsimile. They carried, live, the television pictures of the moon landing to the largest audience in human history, over half a billion people. The system has particular significance for developing nations, providing them with low-cost, international public telecommunications. For example, you can now put a call through to Santiago, Chile, in three minutes which formerly required three days. Since INTELSAT's first communications satellite, "Early Bird", went into orbit in 1965, charges for international telephone calls have been reduced by between 25% and 50%.

By provision of the Communications Satellite Act of 1962, the Communications Satellite Corporation (COMSAT) is the chosen instrument to develop commercial satellite communications. COMSAT is the United States' signatory to the INTELSAT Interim Arrangements and also serves as Manager of the system. With our large vote and COMSAT as Manager, the United States has dominated the system.

INTELSAT is a business operation. It is, actually, an international public utility, jointly owned by the 77 partner-members. The amount of a member's investment is related to his use of the system. In the years 1964-1970, the cumulative gross capital expenditures on the satellite system by the 77 members was \$271 million. The US share (and voting power) is currently about 52% or \$142 million. Ninety-two percent of the total expenditures went to US contractors. There is no US Government money in INTELSAT. America's share is contributed entirely by COMSAT, a private corporation.



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The INTELSAT expenditures do not include the cost of some 50 around stations which have been paid for by each of the 30 countries in which they are located. Averaging \$5 million per station, the total investment in ground stations is \$250 million. (US manufacturers have produced over 50% of the hardware in these stations).

The INTELSAT system has brought modern and direct communication to many areas of the world which previously had none. Formerly, for example, communications between the US and Spain were limited to two indirect voice-circuits across the Pyrenees. Today, via satellite, there are in excess of 50 direct circuits between Spain and the US. The cost of a three-minute telephone call between New York and Spain in 1964 was \$12. Today the cost is \$6.75. Similar examples could be cited for almost every developing country with access to a ground station.

The negotiations for "definitive arrangements" have proved long and difficult. Eight sessions of the Conference have been held since February 1969 with a final Plenipotentiary meeting now scheduled for April/May. Not one but two agreements are involved: an inter-governmental agreement, to be signed by representatives of the member governments, and an operating agreement to be signed by the telecommunications entities (the postal, telephone, and telegraph departments of other governments, COMSAT for the US).

On December 18, 1970, the Working Group, consisting of delegations from 40 countries, completed its work on drafts of the two agreements. The texts contain relatively few bracketed alternatives. (The major issues have been resolved; a few troublesome lesser issues remain.) Thus the prospects appear favorable that the final Plenipotentiary meeting, scheduled to open on April 14, 1971, for 4 1/2 weeks, will succeed in reaching agreement.

When the permanent agreement is reached, much of the world will be linked together for instantaneous telephone, telegraph, TV, radio, facsimile, computer data transmission, and other modes of electronic communication.

DISCUSSION:

Arguments relating to a concerted US effort to bring Europe into a meaningful partnership in the Space Transportation System:

For:

1. Engaging the Europeans in a US program the size of the STS is certainly preferable to forcing them to develop a large space program of their own. Not only do the Europeans have both the technological and financial resources to make a joint venture mutually attractive, but such a program

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would bolster our political objectives of a closely-knit European community working in a cooperative relationship with the United States.

- 2. If we force the Europeans into the development of Europa III, they will have a launcher capability totally independent of the kind of US influence that could be brought to bear through partnership arrangement. They will then be able to fly regional telecommunications satellites that may cause economic harm to INTELSAT.
- 3. The pattern of cooperation set by a joint STS development can serve as a model for similar endeavors in other fields of science.
- 4. Since the US will undoubtedly base a decision to proceed with STS development on essentially national considerations -- whether there is a European input or not -- the contribution by Europe of 10% (\$1 billion) of the program costs would be a financial bonus to the US taxpayer and could make the program more attractive to the Congress.
- 5. There has in recent years been a shift in attitudes of US private firms toward technology sharing. Although commerical cooperations often tend to believe that technology should be restricted to keep others from competing with them, many large US firms have discovered that their international business depends upon the existence of foreign capabilities and skills to which they can relate. In other words, if the technological gap between nations is too great in all areas, there can be no effective flow in either direction. The technological gap between Europe and the United States in the space field is large. It is in this sense that an Atlantic partnership in the development of an STS becomes particularly meaningful. If, together (even on a 90/10 basis), we execute an STS development with the Europeans, we can create a framework that may lead to partnership in all of those fields to which space will eventually relate.
- 6. Significant European participation could increase the costeffectiveness of the STS through the increased use resulting from European mission requirements and payloads.
- 7. There are, in addition, benefits to scientific space research. If the shuttle development is successful, and the Europeans thereby possess their own launch capability, we will have created a stronger partner in Europe for scientific investigation of space. This aspect has been subordinated in all the discussions with the Europeans to matters of industrial know-how transfer, launch availability for COMSATs and other applications, etc., but it is nonetheless true and should not be ignored.

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Against:

- 1. Some argue that we are giving the Europeans too much technology for too little return, to the detriment of already ailing US aerospace firms. Also, it is clear that, to the extent that European dollars are spent on European contractors' efforts in support of this program, these are dollars (and jobs) that will not be made available to their US counterparts. It is possible to speculate that future US business opportunities in other parts of the world may be undercut or underbid by European firms marketing their newly-developed technical competence elsewhere or by bidding in competition with US firms on satellite fabrication jobs for other non-space countries, knowing that a US launch is assured.
- 2. There is a probability that in return for a 10% share of program costs, the Europeans would demand a disproportionately large share of program management responsibilities.
- 3. It should be recognized that management problems in conducting this program across the Atlantic, with several European nations involved, and with each seeking to achieve the maximum degree of domestic return from its investment, will be more complicated and almost certainly less efficient than if the entire project were done in the United States by US firms. This lack of efficiency will entail somewhat greater costs; hence one cannot speak of a full US saving of the billion dollars in developing the STS. Just what these inefficiencies will amount to in dollars is difficult to estimate.

Arguments relating to adherence by the US to our announced position of qualified assurances to the Europeans for launch services:

For:

- 1. From the time the Communications Satellite Act became law through the entire period of the Interim Arrangements it has been uniform US government policy, spearheaded and most strongly advocated by the Department of State, to foster a single global satellite communications system and to oppose regional satellite systems separate from INTELSAT. A relaxation of the US position in order to accommodate European aspirations for a regional satellite system would be counter to our policy.
- 2. In view of the expressed opposition to regional systems on the part of most of the "developing countries", any action by the US which could be read as a "softening" of our support for INTELSAT could put





road blocks in the way of the forthcoming Plenipotentiary conference. It could be taken as a sign of bad faith on the part of the US and as a further example of how the "big boys" are ready to make deals at the expense of the far more numerous developing countries. While it would be too much to say that this act by itself would disrupt the conference or cause it to fail, it is clearly no exaggeration to postulate that it would make agreement much more difficult and leave the US open to serious charges of bad faith.

- 3. The Europeans should be motivated toward post-Apollo participation by a wide variety of technological and social benefits. We should not have to "buy" their participation by yielding to European demands which have as a basis narrow economic motives.
- 4. We have gone as far as we can go toward meeting Europe's desires within the framework of what we recognize as our responsibilities to INTELSAT. To go beyond this framework would not only create problems internationally, but would cause severe domestic reaction from Congress and those government agencies having an institutional interest in a strong INTELSAT consortium.
- 5. The USG is not yet committed to the SST program, whereas our international telecommunications policy and programs are established and have great economic potential. To risk jeopardizing a multi-billion dollar business for program yet to be defined is illogical.
- 6. Even if we were to now conclude an arrangement for launch of a European telecommunications satellite that is acceptable to the interim governing body of INTELSAT, it is virtually certain that when the definitive arrangements come into effect, the case could be re-opened before the INTELSAT Assembly.

Against:

- 1. It would be presumptuous of the US to function as Europe's conscience. The Europeans are entitled to make their own interpretation of the international accords to which they are parties.
- 2. INTELSAT is a going concern, paramount in its field, and not in need of special protection against regional systems that would be at best, only marginally competitive.
- 3. After the concerted efforts to engage the Europeans in the post-Apollo planning, to now adopt a rigid position which would foreclose their opportunities for participation would lose credibility for NASA in its overall



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international program. Moreover, the credibility of the Government's entire program of international scientific and technological cooperation would be questioned.

- 5. If the US holds to its position on launch services, the Europeans will probably respond by proceeding with the development of Europa III. This could lead to a regional telecommunications satellite that would operate to the detriment of INTELSAT.
- 5. Since Japan has been assured conventional US launch possibilities from its territory without a US override in the case of negative advisories by INTELSAT, it would seem that we must accord Europe the same accomodation.

POSSIBLE COMPROMISE SOLUTIONS

- 1. A. The European space conference should be encouraged to complete the studies it is undertaking and, according to the present timetable, submit a detailed communications satellite proposal informally to this government when it is ready -- probably late this year or early next year.
 - B. This government would undertake to give a prompt review -60 to 90 days -- and if it conforms to the informal example
 given by Lefevre, commit itself to support the proposal in
 INTELSAT.
 - B. The Europeans could then be encouraged to submit the proposal to Interim Communications Satellite Committee (ICSC) for review and study. (By that time -- the middle of 1972 -- the Definitive Arrangements should have been negotiated and many nations should have adhered to the new arrangements. The timetable for getting the necessary adherences would probably run between 1 and 2 years -- more realistically around 18 months.) With our support and the European support on the ICSC, the chances are very favorable for a strong majority vote for a favorable recommendation.
 - D. With this support and with representations to other countries made by us, as well as the European group, the stage would be set for prompt consideration, and hopefully approval, by the Assembly at its first meeting sometime in 1973.
 - E. This would be very considerably in advance of any presently scheduled launch date for a European satellite.





- 2. A. We would undertake the following commitments with respect to the launching of European payloads from non-US territory in vehicles purchased from the US or built abroad on license from the US: We would agree to the sale of appropriate US vehicles for launching abroad and/or the licensing of their construction in Europe under the conditions that they be used for peaceful purposes, that use by or technical disclosure to non-participants in the program be subject to mutual agreement, and that European obligations under international agreements be met. In such cases, the decision to launch in the face of failure to obtain a two-thirds endorsement by INTELSAT would rest entirely with Europe. The types of launch vehicles we have in mind are Thor-Delta configurations, Atlas-Centaur, and the Space Shuttle.
 - B. These policies would <u>not</u> make it necessary for Europe, unless it wished to do so, to invest in developing its own launch facilities for US vehicles. So long as US-launched vehicles were available to meet European requirements, Europe would not have to undertake such costs. These assurances with respect to launchings abroad could stand as a contingency in the event that Europe considered US-launched services inadequate. The purchase of vehicles and the development of the necessary launch sites could be encompassed within the development time required for a new satellite system.

EUROPEAN REACTIONS TO LEFEVRE MISSION

Paris:

- ". . . For France the only real point at issue is launcher availability and US interpretation of INTELSAT Article 14."
- ". . . US position on launcher availability. . . although disappointing, did not come as a surprise."

Brussels:

- ". . . US cannot have advantages of European cooperation without disadvantages. If US wishes to have European confidence, it must also trust and respect European partners. Europe cannot accept US 'trusteeship' unilateral decision on whether European projects accord with INTELSAT agreement. . . . It is too early to talk about failure since there is still some hope for success in negotiations."
- ". . . US is treating its allies in high-handed manner, and is jealously guarding its privileges."

Bonn:

"German officials were surprised and shocked by what they universally described as the 'hard line' taken by the US during discussions with the second Lefevre delegation. They expressed fear that it will be impossible for Europe to participate in the post-Apollo program and dismay that Europe will find it necessary to develop an independent launcher capacity which would be wasteful and also a divisive element in US-European cooperation."

Bern:

". . . Interpretation of application Article 14 might be subject for reconvened INTELSAT Plenipotentiary in April."

London:

". . . Something seems to have happened which casts doubt on US desire for European participation."

Rome:

". . . Italians sadly expect following consequences of Washington meeting:

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- A. Considerable difficulties at April INTELSAT plenum.
- B. Europa III will be built as European project."
- ". . . Believe that France, and apparently Germany, deliberately misinterpreting US position on launcher availability, thus putting onus for possible failure on post-Apollo discussions on US and justifying the building of Europa III."